

ABSTRACT

A system is provided that operates on the magnetorheological principle as a detent or wiper element and/or for electrical detection of direction of rotation. The system includes a gear pump, a rotary knob, and at least one gear. The gears are mechanically driven by the rotation of the rotary knob. A magnetorheological fluid is moved and/or pumped within a channel or ring. The viscosity of the fluid is changed by a pulsed magnetic field at a first coil that is provided on the channel, and thereby a change in the torque or the detent is produced. A second coil that is provided on the channel senses a direction of rotation of the rotary knob.